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Multidomain engagement and self-reported psychosomatic symptoms in middle-aged women and men

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Abstract: Background: Multimorbidity can be operationalized as the presence of multiple psychosomatic symptoms and has been shown to be detrimental to the quality of life across the life span. Middle-aged adults are generally engaged in multiple life domains simultaneously. This is one of the developmental challenges of middle adulthood as it can lead to conflict between the demands of different domains and, in turn, contribute to multiple psychosomatic symptoms, thereby diminishing the quality of life. This may be particularly true for women. Facilitation between life domains may serve to reduce the number of psychosomatic symptoms. However, this subject has been largely neglected in the literature. **Objective:** We aimed to close this gap by investigating the influence of conflict and facilitation between life domains (work, family, leisure) on self-reported psychosomatic symptoms in middle-aged women and men. **Methods:** Life domain conflict/facilitation and psychosomatic symptoms were assessed via self-report in a cross-sectional study with 277 adults aged 30-55 years (mean = 41.70, SD = 7.2; 56.7% women) who all worked at least 30 h/week and lived with their partner or family. **Results:** In line with our hypothesis, women reported more psychosomatic symptoms when they experienced conflict between life domains. However, contrary to expectation, they did not profit more from facilitation than men and, at low levels of facilitation, women even reported more psychosomatic symptoms than men. In men, there was no association between life domain conflict/facilitation and psychosomatic symptoms. The results were robust when statistically controlling for neuroticism. **Conclusions:** Engagement in multiple life domains influences the frequency of psychosomatic symptoms in women, but not in men: women suffer more and profit less than men from combining work, family and leisure.

DOI: <https://doi.org/10.1159/000358756>

Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-97620>

Journal Article

Accepted Version

Originally published at:

Freund, Alexandra M; Knecht, Michaela; Wiese, Bettina S (2014). Multidomain engagement and self-reported psychosomatic symptoms in middle-aged women and men. *Gerontology*, 60(3):255-262.

DOI: <https://doi.org/10.1159/000358756>

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17 This research was supported by the National Centre of Competence in Research
18 “LIVES – Overcoming vulnerability: Life course perspectives,” which is financed by
19 the Swiss National Science Foundation, and by a grant awarded to Michaela Knecht
20 by the Suzanne and Hans Biäsch Foundation for Applied Psychology. The authors are
21 grateful to Tamara Herz for carefully editing the manuscript.

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49 statistically controlling for neuroticism.

50 *Conclusions:* Engagement in multiple life domains influences the frequency of
51 psychosomatic symptoms in women, but not in men. Thus, women suffer more and
52 profit less than men from combining work, family, and leisure.

53 *Key Words:* multimorbidity, quality of life, psychosomatic symptoms,
54 conflict, facilitation, sex differences

55

Multi-Domain Engagement and Self-Reported Psychosomatic Symptoms in Middle-Aged Women and Men

Multimorbidity is defined as the co-existence of two or more chronic medical conditions in an individual and has been linked to reduced quality of life (e.g., [1]). In fact, there is widespread agreement in the literature that quality of life is a multidimensional construct that includes physical well-being [2]. Psychosomatic symptoms do not necessarily reflect medical conditions, but they constitute an important, subjective aspect of physical well-being. Given that the “poorer physical functioning that accompanies multimorbidity is persistent and may even increase over time” [3, p. 211], adults who already subjectively experience poorer physical functioning due to multiple psychosomatic symptoms in young or middle adulthood might be at particular risk for disadvantageous trajectories in old age. In other words, (un-)successful aging does not begin only in late adulthood but constitutes a lifelong process that continues into very old age. Thus, because they have an impact on the quality of life and are a precursor of (un-)successful aging, it is important to understand the factors that contribute to the co-existence of multiple psychosomatic symptoms in young and middle adulthood.

From a psychological perspective, the diagnosis of multiple “silent” medical conditions (i.e., one without symptoms that are perceivable to the patient) might not be the best operationalization of multimorbidity. Instead, one would expect the number of symptoms perceived by the patient—regardless of whether they are linked to one or multiple medical conditions—to affect psychological well-being. In fact, in their review of the literature on multimorbidity and quality of life, Fortin and colleagues [1] concluded that multimorbidity, operationalized as the presence of multiple chronic medical conditions, appeared to affect the medical dimensions of

quality of life more strongly and the psychological dimensions of quality of life less consistently. Thus, taking a psychological perspective, we investigated the antecedents of self-reported psychosomatic symptoms. In the following, we will focus on people's engagement in multiple life domains (i.e., conflict and facilitation in the domains of work, family, and leisure) during the "rush hour" of life, that is, late young and middle adulthood, as one of the factors that might contribute to the number of psychosomatic symptoms. Moreover, we investigated whether there are sex differences with respect to the impact of conflict/facilitation between life domains on the number of reported psychosomatic symptoms.

Young and middle adulthood as the rush hour of life

Freund, Nikitin, and Ritter [4] have argued that young and middle adulthood could be described as the "rush hour" of life [5] due to the prolonged phase of "emerging adulthood" [6] in many Western societies combined with age-related constraints on opportunity structures for the central developmental tasks of young adulthood, namely, establishing a professional career and starting a family. It appears that young adults postpone having children until they have finished the nowadays rather prolonged education and role exploration phase. In addition, prescriptive social norms regarding the timing of life-course transitions have weakened and the number of options available to young adults in their search for a profession, partner, and lifestyle has increased [7]. However, age-graded social opportunity structures (e.g., age-graded access to education and—often unofficial—age limitations for certain career opportunities) as well as biological constraints (e.g., age-related decline in fertility) increase the pressure to start a family and launch one's career in late young or middle adulthood. As a result, the age group between 30 and 55 has to cope with the simultaneous engagement in multiple, highly resource-demanding life domains.

The demands of being engaged in multiple life domains simultaneously can be overwhelming and lead to conflicts. Regarding the pursuit of multiple goals, Riediger and Freund [8, 9] found in several studies that young adults and early middle-aged adults reported higher degrees of intergoal conflict than late middle-aged or older adults. Conflict stemming from one's pursuit of multiple goals simultaneously occurs when there are insufficient resources such as time or energy to pursue all of them satisfactorily or when goal-related activities are incompatible (e.g., picking up one's child from childcare and working long hours). In contrast, they found that facilitation between goals increased across adulthood. *Facilitation* occurs when a single activity serves goals in more than one domain (e.g., working out with one's partner serves both family and leisure goals) or when one goal is instrumental in achieving another goal (e.g., getting a well-paying job supports the family).

The research reported thus far focused on conflict and facilitation between personal goals in various life domains and used goal pursuit or subjective indicators of well-being as outcome variables. None of these studies investigated conflict/facilitation between life domains in a broader sense or went beyond personal goals, nor have they included psychosomatic symptoms as an outcome variable.

Taking a broader perspective and building on work by Greenhaus and Beutell [10], we argue that conflict between life domains occurs when engagement in one life domain hinders or precludes engagement in another. Similarly, facilitation occurs when engagement in one life domain enables or enhances engagement in another.

There is first evidence concerning cross-domain conflicts and psychosomatic symptoms: In a study with a large sample of female homecare nurses, Höge [11] found that the experience of work–family conflicts partially mediates the relationship between work-related time pressure and psychosomatic symptoms. However, Höge

only examined (a) two domains (viz., work and family) and (b) the experience of conflict between domains. In contrast, the present study focused on three domains (work, family, leisure) and on conflict as well as facilitation between domains.

Multi-domain demands, stress, and psychosomatic symptoms

Given that simultaneous engagement in multiple life domains places high demands on resources, it is likely that young and middle-aged adults feel stressed during the “rush hour” of life. In fact, according to Lazarus [12], stress occurs when the demands of a given situation overtax a person’s resources. Stress, in turn, has been shown to be related to psychosomatic symptoms. For instance, Frese [13] found that subjective psychological and physical stress at work was significantly related to psychosomatic symptoms across different samples of workers and that these associations were robust when he controlled for potential third variables such as income or SES. Moreover, the results of cross-lagged analyses of a longitudinal study suggest that stress leads to an increase in psychosomatic symptoms (not vice versa). There is increasing interest in the relationship between the stress caused by conflicts resulting from simultaneous engagement in multiple life domains, particularly work and family, and psychosomatic symptoms (e.g., [11]).

Most of the research on engagement in multiple life domains has focused on the conflict and negative spillover between them. Research has only just begun to also address the topic of facilitation between different life domains. However, work and family not only conflict with each other, they can also facilitate each other. For instance, positive experiences in the family domain can result in a positive mood that spills over to the work domain (e.g., [14, 15]). Extending the concept of work–family relationships to include facilitative relationships between the two domains, Wiese, Seiger, Schmid, and Freund [16] found that positive outcomes (i.e., job or partnership

satisfaction) were primarily related to facilitation and not to conflict between work and family.

In addition to the life domains of work and family, we also investigated that of leisure in the present study because leisure has been found to play an important role in coping with work-related stress and might help people to recover, to increase productivity, and to prevent burnout (e.g., [17]). At the same time, however, leisure activities draw on the time a person can spend with her/his family (at least when family members cannot be included in leisure activities) or invest in work-related tasks. Therefore, research on the effect of engagement in multiple life domains and stress-related outcomes, such as psychosomatic symptoms, need to consider leisure as well as work and family.

One of the problems encountered when assessing a person's psychosomatic symptoms and/or perceived conflict/facilitation between life domains is that his/her reports may be biased towards more positive or negative aspects of his/her situation and well-being. In other words, correlations between perceived life-domain conflict and psychosomatic symptoms might be spurious due to the fact that both are caused by the person's generally negative perception of and report about psychological and physiological experiences. A key candidate for a personality variable causing such a spurious correlation is neuroticism. In fact, neuroticism has long been linked to increased reports of psychosomatic symptoms (see, e.g., [18]). Moreover, there are sex-related differences in neuroticism such that women score somewhat higher than men (e.g., [19]). Thus, the present study controlled for the impact of neuroticism on the associations between engagement in multiple life domains and reports of multiple psychosomatic symptoms.

Sex-related differences

Previous research has consistently shown that women report more physical and psychosomatic symptoms than men do. For instance, Kroenke and Spitzer [20] investigated a sample of 1,000 primary care patients and found that most symptoms (e.g., headache, back pain, fatigue, dizziness) were reported about 50% more frequently by women than by men. Similarly, women report more pain symptoms (for an overview, see [21]). Some experimental work suggests that the pain threshold as well as pain tolerance may be lower in women than men (e.g., [22]). Interestingly, Keogh and Birkby [22] found that anxiety sensitivity was associated with sensory pain in women but not men. So, maybe women who are more sensitive to conflicts between life domains are also more sensitive to physical symptoms and, hence, report more psychosomatic symptoms. This would be in line with research showing that stress leads to more psychosomatic symptoms in girls than boys and in women than men (e.g., [23]). In their study of the effect of the burden of having to combine work and family, Väänänen and colleagues [24] found that both men and women who reported that their work-related roles and activities negatively affected their family life had a significantly higher risk of experiencing psychological distress (i.e., discomfort or unpleasant emotions such as sadness or anxiety) and reported poorer subjective health.¹ In addition, women (but not men) experienced more psychological distress and poorer subjective health when their family-related goals were perceived to have a negative impact on their work life. Thus, overall, women seem to suffer more from conflicts emerging from their engagement in multiple life domains. However, given that positive social relationships (social support) appear to counteract

¹ Different to psychosomatic symptoms, which are usually assessed using symptoms checklists (see Method section below), subjective health is typically assessed by an item calling for an overall evaluation of health: “Overall, how would you currently rate your health?”

work-related stress more in women than in men [25], we expect women also to profit more than men from facilitation between life domains.

In summary, we hypothesize that women—but not men—will report more psychosomatic symptoms when they experience conflict resulting from their engagement in multiple life domains and fewer psychosomatic symptoms when they experience facilitation between the different life domains.

Method

In this cross-sectional study, we investigated sex-related differences in the relationship between conflict/facilitation arising from simultaneous engagement in multiple life domains and self-reported psychosomatic symptoms in a sample of young and middle-aged men and women. The data reported here were collected online and constitute the first measurement occasion of a larger ongoing three-wave longitudinal study.

Sample

We recruited participants through their workplace, newspaper articles, and advertisements on Internet platforms and in newsletters. The criteria for participation were age (30 -55 years), working ≥ 30 hrs/week, living with their partner or family. The resulting sample consisted of $N = 277$ adults aged 30 to 55 years ($M = 41.70$, $SD = 7.2$; 56.7% women). Most (78.7%) of the participants were Swiss; the remaining participants reported other nationalities, but were fluent in German. The majority of the sample (86.6%) reported being in a steady partnership; 30.8% had no children 19.2%, had one child, 33.7% had two, and 16.3% had three or more children.

Procedure

Adults interested in participating in the study followed a link to a webpage. After providing informed consent, they completed a questionnaire that assessed

conflict and facilitation between the life domains of work, family, and leisure; neuroticism; and psychosomatic symptoms. Participation was reimbursed with 60 Swiss francs (for the longitudinal questionnaire part of the study).

Materials

Relations between life domains. The relations with respect to conflict and facilitation between the life domains of work, family, and leisure were assessed using two separate scales.

Conflict. Conflict between life domains was measured using an adapted questionnaire originally created by Carlson and Frone [26], which assesses conflicts between work and family. We extended the original questionnaire to include the leisure domain, shortened it to 36 items, and translated it into German. A sample item for conflict spilling over from the family to the leisure domain is: “How often does your family life or partnership keep you from spending the amount of time you want on leisure?” Ratings ranged from 0 (*never*) to 5 (*always*), $\alpha = .90$, $M = 1.91$, $SD = 0.60$.

Facilitation. Facilitation between the life domains was measured using a questionnaire by Wiese et al. [16] that assesses transfer of positive mood, transfer of competencies, and compensation between work and family. We extended the original questionnaire to include the leisure domain and shortened it to 58 items. A sample item for the transfer of positive mood from the leisure to the work domain is: “If I am in a good mood when undertaking my leisure activities, I am in a good mood at work, too.” Ratings ranged from 0 (*not true at all*) to 5 (*completely true*), $\alpha = .94$, $M = 3.28$, $SD = 0.64$.

Self-reported psychosomatic symptoms. The list of psychosomatic symptoms was a slightly modified version of the Symptom Checklist-90-R (SCL-90-

R; German version [27]) to which we added one item about sleep disorders. The 12 items assessed psychosomatic symptoms such as headaches, back pain, dizziness, etc., over the past few days. The severity of psychosomatic symptom was rated on a scale ranging from 0 (*not at all*) to 5 (*extremely*). We recoded the ratings so that 0 = no and 1 to 5 = yes. The reason for dichotomizing the scale was that the distribution was better for the dichotomized than for the continuous score. Moreover, given that we used reported psychosomatic symptoms as an indicator of multimorbidity, we were interested in the number rather than the severity of perceived symptoms. Finally, simply counting the number of self-reported diseases seems to result in almost as good a predictor of most outcomes as complex measures of multimorbidity do [28]. Thus, a sum score of the number of psychosomatic symptoms was computed. This score ranged from 0 to 13, $\alpha = .78$ $M = 4.58$, $SD = 3.1$. The continuous and the dichotomized scores were highly correlated ($r = .88$, $p < .001$).²

Neuroticism. We assessed neuroticism using the four items of the German version of the Big Five Inventory that showed the best correlations with the neuroticism factor [29]. The rating scale ranged from 0 (*very uncharacteristic*) to 5 (*very characteristic*). Items were averaged to a mean score for the analyses (range: 0–5, $\alpha = .75$, $M = 1.9$, $SD = 0.99$).

Results

Zero-order correlations between the study variables showed that the number of psychosomatic symptoms reported was significantly (positively) associated with cross-domain conflict ($r = .31$, $p < .001$) and neuroticism ($r = .41$, $p < .001$), but not with facilitation ($r = -.11$, *ns*). The number of reported psychosomatic symptoms was unrelated to age ($r = -.01$, *ns*). Conflict and facilitation did not correlate with each

² We also ran all of the analyses reported below with the score aggregating the continuous ratings and found no differences in the results.

other ($r = .06, ns$), but both correlated moderately with neuroticism ($r_{\text{conflict/neuroticism}} = .28, p < .01$; $r_{\text{facilitation/neuroticism}} = -.17, p < .01$).

Regarding sex differences, women reported having more psychosomatic symptoms than men did ($M_{\text{women}} = 5.05, SD = 3.34$; $M_{\text{men}} = 3.97, SD = 2.63$; $t(273) = 2.86, p = .005$), scored higher on neuroticism ($M_{\text{women}} = 2.03, SD = 1.02$; $M_{\text{men}} = 1.77, SD = 0.93$; $t(273) = 2.15, p = .03$), reported more facilitation ($M_{\text{women}} = 3.34, SD = 0.68$; $M_{\text{men}} = 3.19, SD = 0.57$; $t(275) = 1.93, p = .05$), but did not differ from men with respect to conflict ($M_{\text{women}} = 1.88, SD = 0.6$; $M_{\text{men}} = 1.95, SD = 0.58$; $t(275) = -0.97, p = .33$).

Multiple regression analyses were used to (1) assess whether the association between cross-domain conflict and self-reported psychosomatic symptoms was robust after controlling for neuroticism and (2) test the hypotheses that cross-domain relations interact with sex in predicting psychosomatic symptoms. Table 1 summarizes the results of the multiple regression analyses. The number of psychosomatic symptoms was regressed separately on cross-domain conflict and facilitation. In Step 1, we entered neuroticism, sex, and age; in Step 2 cross-domain relationships (conflict or facilitation); and in Step 3 the interaction of cross-domain relations (conflict or facilitation) and sex. As hypothesized, there were significant interactions between cross-domain relations (conflict and facilitation) and sex in predicting self-reported psychosomatic symptoms.³ To better understand the nature of these interactions, we analyzed the simple slopes separately for male and female participants. Figure 1 (Panel A) shows that, as expected, there was a positive association between cross-domain conflict and the number of self-reported

³ Including the two- and three-way interactions Conflict/Facilitation x Neuroticism and Conflict/Facilitation x Sex x Neuroticism did not significantly improve the prediction of psychosomatic symptoms.

psychosomatic symptoms for women ($b = .44, p < .001$), but not for men. Analyses of regions of significance show that this association differed significantly ($p \leq 0.05$) for men and women for values of conflict ≥ 1.78 . Figure 1 (Panel B) displays the mirror image of this pattern for goal facilitation: The more life domains facilitated each other, the fewer psychosomatic symptoms women reported ($b = -.21, p < .01$). Analyses of regions of significance showed that the slopes for men and women differed significantly ($p \leq 0.05$) for values of facilitation ≤ 3.32 . As can be seen in Figure 1, there was no association between cross-domain facilitation and psychosomatic symptoms for men.

In a set of regression analyses, we also explored whether the relationship between cross-domain facilitation and conflict, on the one hand, and self-reported psychosomatic symptoms, on the other, was moderated by age, but did not find significant interactions (all $ps > .10$). Similarly, the reported number of children showed no main effect or interaction in predicting psychosomatic symptoms (all $ps > .09$).

Discussion

How does engaging in multiple life domains affect the number of psychosomatic symptoms one experiences in adulthood? The present study shows that the relations between multi-domain engagement and self-reported psychosomatic symptoms is not a simple one, but depends on (a) whether the engagement in multiple domains is characterized by conflict or facilitation and (b) the sex of the person engaged in multiple domains. Our results suggest that women suffer more than men from engagement in multiple domains during middle adulthood: They report having more psychosomatic symptoms when conflict between different life domains is high and facilitation between them is low. In contrast, men's self-reported psychosomatic

symptoms seem unaffected by conflict or facilitation. Our finding that women suffer more from conflict than men is in line with previously found sex differences in the association between anxiety sensitivity and pain [22] or stress and psychosomatic symptoms [23], as well as with the finding that negative spillover between work and family is more strongly and pervasively related to health problems in women than men [24].

However, women do not appear to be simply more sensitive to multi-domain relationships than men are: Women do not profit more from facilitation than men do. This result was unexpected based on the findings from the area of social relationships showing that social support helps women more than men to counteract work-related stress [25]. In our study, women and men with high levels of facilitation reported the same number of psychosomatic symptoms, but women with low levels of facilitation reported more psychosomatic symptoms than their counterparts did. Thus, they appear to be doubly at risk—they report more psychosomatic symptoms when there are strong (compared to low) conflicts between their life domains and when there is little (compared to high) facilitation between domains.

Interestingly, number of psychosomatic symptoms was unrelated to age, although this study covered an age range of 25 years. It appears that, at least in middle adulthood, chronological age is less important than how people cope with engagement in multiple life domains. Juggling the many demands of work, family, and leisure during the “rush hour” of life might constitute one of the main developmental tasks of this age group, particularly for women.

One of the strengths of this study is that we were able to control for neuroticism, a personality trait that has been associated with psychosomatic symptoms as well as with whether one experiences intrapsychic conflict or harmony.

In fact, neuroticism was associated with reports of more psychosomatic symptoms as well as more conflict and less facilitation. Importantly, then, we controlled for neuroticism in our analyses to ensure that the associations between cross-domain relations and psychosomatic symptoms were not driven by any negatively biased view of oneself and the world.

Limitations. One of the limitations of the present study was the cross-sectional design, which did not allow us to test time-lagged associations. In other words, this study did not allow us to test whether cross-domain relationships result in more psychosomatic symptoms or whether psychosomatic symptoms result in more conflict and less facilitation between life domains. We assume that more conflict and less facilitation result in greater stress and, thereby, more psychosomatic symptoms in women. However, the opposite direction of causality is also plausible: Experiencing psychosomatic symptoms might constrain the resources necessary for engaging in multiple life domains, thereby contributing to high cross-domain conflict and low facilitation. In fact, we assume that there is a reciprocal relationship between cross-domain conflict/facilitation and psychosomatic symptoms. A test of this hypothesis requires multiple assessments of cross-domain relations and psychosomatic symptoms over time.

Conclusion. Psychosomatic symptoms in earlier phases of adulthood likely contribute to poorer physical functioning later in life [3]. Thus, understanding which factors contribute to multiple psychosomatic symptoms in middle adulthood seems key for identifying risk factors that may lead to psychological and physical problems in old age. Our results suggest that the ability to cope with engaging in multiple life domains might be such a key factor in women. High conflict and low facilitation between multiple life domains are related to reports of more psychosomatic symptoms

in women. In contrast, there is no association of conflict or facilitation between life domains and reported psychosomatic symptoms for men. This may imply that the social and cultural context is less supportive for women than for men when it comes to their attempt to cope with the many demands of work, family, and leisure. In fact, research shows that work-related demands are at least as high for women as for men and that women still bear the brunt of family-related and household chores [30]. Thus, we are hesitant to suggest that women need better coping skills, particularly in light of the fact that we statistically controlled for neuroticism in our study. Women, then, seem to be in need of more support from their environment for the many demands they are asked to meet during young and middle adulthood; this support would serve to promote their successful development across adulthood.

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Table 1. Results from Multiple Regression Analysis Predicting Psychosomatic Symptoms From Relations Between Life Domains (Conflict, Facilitation), Sex, Age, and Neuroticism

Relations Between Life Domains: Predictor	Relations Between Life Domains As Predictors of Psychosomatic Symptoms			
	Conflict		Facilitation	
	ΔR^2	β	ΔR^2	β
<i>Step 1</i>	.180***		.180**	
Neuroticism		.395***		.395***
Gender		-.120 *		-.120 *
Age		.038		.038
<i>Step 2</i>	.054***		.004	
Domain Relationships (Conflict / Facilitation)		.249***		-.066
<i>Step 3</i>	.023**		.019*	
Domain Relationships x Sex		-.462**		.413*
Total R^2	.258		.203	

Note. $N = 277$; * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 1. Interaction between multi-domain engagement (Panel A: conflict; Panel B: facilitation) and sex in predicting self-reported psychosomatic symptoms.

